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ABSTRACT

Designed for use in helping parents to become familiar with their children's microcomputer needs, this guide addresses two important questions: whether parents should provide a computer in the home to assist children in their reading development, and which computer they should purchase. The answer to the first question is a simple yes, but the second is more complicated, and it is recommended that the parents utilize a three phase approach to computer purchases: education in computer terminology, formulation of questions to ask a computer salesperson, and an understanding of the necessity for continual updating of their computer education. To aid in the development of computer literacy, a microcomputer terminology matching quiz provides 23 key computer terms. Phase two presents five important factors for parents to consider before a purchase is made: (1) the brand microcomputer available to the child in school; (2) the availablity of appropriate educational software; (3) cost; (4) warranty, service, and dealer helpfulness; and (5) versatility of the microcomputer. A concluding list of nine suggestions provides hints for keeping children abreast of the microcomputer revolution, including information on computer magazines and books, computer camps, and resources for software evaluation. (JB)

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What to Tell Parents About Microcomputers

Computers have become "superman" or "wonderwoman" marvels both in the workplace and in our schools.

In the workplace. With the assistance of computers and microcomputers, insurance company personnel immediately access policy and claims information related to phoned-in auto accident reports; farmers and agricultural economists forecast crop yields; medical specialists call up instant summaries of a patient's medical record, including histories of illnesses and laboratory work results; engineers design better bridges by creating graphic "on screen" representations that actually twist and sag in reaction to varying amounts of wind, water, ice, snow, and traffic forces; bankers view "on screen" charts listing current and "as they change" money markets rates around the world so that investment "roll over" profits are maximized.

In our schools. In 1982, there were 92,000 computers in America's 24,000 public schools. In 1983, the number had risen to 300,000. Reported another way, by 1983, more than 60% of America's 16,000 school districts had at least one school building in which a microcomputer was used for instructional purposes. By 1990, many analysts are predicting that most homes in America will have a microcomputer of one sort or another and that there will be at least one million microcomputers in our schools.

In light of these facts and projections, the two questions so many parents are asking today are these:

1. Should we get one to help with our child's reading development?
2. Which one should we get?

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Gerald H. Maring

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

The answer to the first question is simple, yes. Even with a million microcomputers in our schools by 1990, each youngster, as one of 50 million of our nation's students, will not have enough opportunity to become computer literate and computer competent if she has to wait in line to get "on line" in school. So, parents should seriously consider getting one. . . and relatively soon if they and their child want to keep up with the revolution that is occurring in the workplace, in the schools, and in neighborhoods across America.

The answer to the question "which one should we get" is more complicated. The selection and evaluation of microcomputer hardware and software is one of the thorniest problems the schools and parents are currently facing. There are lots of products available on the microcomputer market and the product in general is an intricate one that has myriad applications and components. Over 150 companies build and market major computer products. Hundreds of others offer ancilliary devices and thousands are in the software business. Purchasing the right microcomputer is probably more complex than purchasing an automobile. Like cars, they come in a multitude of brands and with many, many features and options.

To help parents arrive at the right decisions, I recommend a three phase approach. Advise them that they need to first learn microcomputer terminology at the "survival" level. Second, help them formulate the right questions to ask when they visit various microcomputer shops or showrooms. Third, after they have made their choice and selected the best model for them and their child, help them realize that their "microcomputer" education will already need updating.

PHASE ONE:
Helping Parents Establish A "Survival" Computer Vocabulary

The "matching quiz" that follows is actually a glossary list which provides a "survival skills level" vocabulary to help parents comprehend what is said and written about microcomputers. If they have conversational mastery of these basic terms, they will be able to "talk microcomputers" with their children as well as with salespersons, educators, and acquaintances who are more articulate in "computereze." Most probably, their children will know more than they do about many of the concepts these words describe.

Have parents work on this matching exercise FIRST and then ask them to give it to their children. Then they should compare scores.

MICROCOMPUTER TERMINOLOGY MATCHING QUIZ

1. BASIC	9. bit	17. debugging
2. word processor	10. byte	18. LOGO
3. disk	11. K	19. light pen
4. RAM	12. Peripherals	20. chip
5. ROM	13. modem	21. high level language
6. graphics	14. program	22. hardware
7. joystick	15. PLATO	23. software
8. disk drive	16. input devices	

_____ A. The most prevalent language for educational computing. Easy to learn and available on every kind of microcomputer, you can use it to write programs using "simple commands."

_____ B. Silver-grey squares about the size of your fingernail, they contain thousands of passage ways that guide electronic messages or calculations.

_____ C. One of these stands for one thousand and 24 "Bytes" of computer memory; and, in general, refers to the capacity of a computer's memory. This can be deceptive, though, because the machine's own operating software may steal varying degrees of this capacity, depending on the machine.

_____ D. The machine that plays and reads from a floppy disk.

_____ E. Stands for a string of 8 bits (Binary Digits; "0's and 1's" which, when combined, represent a letter, number, or symbol.

_____ F. Like BASIC, Fortran, LOGO, Pascal, Cobol, and PILOT, these are languages that computers are programed to understand and that enable you to communicate with your computer.

_____ G. If programs won't work, they are not usually all wrong. They simply need this done to them. This process of logic or analysis is always more fun and more effective if two or more do it together.

_____ H. A language created by MIT professor Samuel Papert so that primary grade children could learn to program. Although it encourages analytical and problem-solving skills, it is below the maturity-level of secondary school students.

_____ I. Meaning Read Only Memory, this kind of storage cannot be changed by the user. Store bought games or programs are in this category.

_____ J. Standing for Random Access Memory, this is a section of computer storage a programmer-user can reuse, erase, and store. But if you want to permanently store it, you have to transfer it to a floppy disk.

_____ K. A fundamental unit of computer memory.

_____ L. On a TV football game, the sportscaster uses one of these to diagram plays on the screen. In the home, it can really help you do computer graphics, as can a "mouse" or graphics tablet.

_____ M. An option which hooks up your computer to others through phone lines. With it, typed messages appear on other screens besides your own.

_____ N. These include printers, disk drives, TV screens, typewriter keyboards, joysticks. Like new car options, only they expand the capabilities of microcomputers.

_____ O. A system originally developed in the 60's and 70's for large, mainframe computers in universitites. Put out now by Control Data Corporation, it will also run on Apple and Atari home computer systems. It contains over 250 software courses in such subjects as math, physics, social studies and foreign languages.

_____ P. Joysticks, touch panels, light pens, paddles, and so on. Of course, the keyboard is the major one.

_____ Q. The instructions that tell your computer what it should do.

_____ R. Is to a microcomputer what a record is to a phonograph.

_____ S. Pictures, drawings, special characters, and so on, that appear on your screen or printer.

_____ T. An available program which allows you to produce printouts (like term papers, memos, letters, etc.). It will usually even correct common spelling errors and enable you to reorganize and edit your writing without having to do the whole thing all over again.

_____ U. The machine itself or peripherals.

_____ V. Disks, programs, and so on.

Answers

18	A.	19	L.
20	B.	13	M.
11	C.	12	N.
8	D.	15	O.
10	E.	16	P.
21	F.	14	Q.
17	G.	3	R.
18	H.	6	S.
5	I.	2	T.
4	J.	22	U.
9	K.	23	V.

PHASE TWO: Before Parents Buy: Five Important Questions and Answers to Consider

America's schools recognize the impressive potential microcomputers offer in the area of learning assistance. Educators are putting "mega-dollars" into microcomputer in-service training for teachers because beyond a doubt the microcomputer is both a tool for learning and a "subject matter" or topic to be learned and mastered in and of itself. School districts across the nation are trying to keep up with each other. Superintendents and principals as well as teachers are acutely aware of how their staffs and facilities compare with those in neighboring districts. Practically all districts have developed selection criteria for the purchase of microcomputers.

To help parents make prudent purchases, give parents copies of the following questions and suggested answers.

QUESTION ONE: What Brand Microcomputer Does My Youngster's School Have?

Parents need to ascertain the answer to this question because it is probably best for them to get the same brand. Their youngster will want to bring their programs to school and will want to borrow the schools software as well as the programs and games their teachers and friends make. By getting the same brand the school system has, they eliminate problems of software and program incompatibility.

Aside: Some time ago, I was visiting a small, rural school district to learn more about its utilization of microcomputers. I found that high school students there were computer whizzes. They were creating programs on a particular brand of microcomputer. Their schoolmates in the elementary grades were using these programs to deepen and

expand their knowledge of key vocabulary in social studies, math, science, grammar, and so on. The senior high students were taking key terms out of the elementary textbooks and programming them into learning activities in the form of crossword puzzles, word searches, word and sentence scrabbles, hangman exercises, and so on. It would have been wise, in my opinion for parents in this district to invest in the same brand the school was using.

QUESTION TWO: Will My Youngster Be Able To Write Her Own Programs On the One We Buy?

This is an important question because the best predictor of computer literacy is the amount of time the user spends at work and at play with the machine. Youngster won't be able to develop their programming skills beyond primary levels unless the model parents select has (1) a standard keyboard, (2) the BASIC (Basic All-Purpose Symbolic Instruction Code) language programmed into its ROM, and (3) has enough (16 to 64 K are considered minimums to start with) RAM to allow for down-the-road endeavors like word processing. Word processing helps immensely with spelling, compositions, and reports, and the creation of microcomputer games and activities related to grade-level subjects. Final requirements are that the company should offer a number of software disks that teach how to program and acquaint children and parents with their system's capabilities and potential.

QUESTION THREE: To Buy One That is Compatible With the One at My Youngster's School and a Model That My Youngster Can Program, How Much Will I Have to Pay?

Of course, prices vary depending on a number of factors:

a) changes in manufacturer's prices,
b) differences in the pricing practices of retail or wholesale outlets,
c) the number of peripherals parents select, and

d) the amount of software items parents add onto their receipt.

e) the expandibility and flexibility of the machine.

Aside: One of my doctoral students, who is a teacher and whose spouse is a professor in the area of biochemistry, answered the question this way: "Well, since we decided to buy a model that was expandable, that had word processing, two disk drives and a printer to help Herb write up his research for submission to professional journals, that was the same brand our school district uses, our bill was about $2,100. Of course, the base price was about $1,000. But we wanted a number of fairly expensive options and peripherals. Before we had our kids, we went through three 35mm cameras. Only then did we reach the $300 model that had the quality and features we wanted. We just didn't want to do that with our microcomputer. We believe we have one that we'll keep until the kids are through high school. It's one we can add newly developed components to."

QUESTION FOUR: How Can I Evaluate Factors Related Warranty, Service, and Dealer Helpfulness?

Although most microcomputer problems pertain to "software," most brands do carry a 90 day or more warranty. Some brands carry "extended" warranty plans, which can be renewed year after year. However, parents should also consider how close or far their service center is should they need repair or warranty work. Crating up and shipping a microcomputer can be burdensome, not to mention expensive.

Parents should next consider whether the brand they are about to purchase has a toll-free number to call if family members have questions or problems. Parents can judge for themselves whether the dealer they are planning to buy from will be helpful after the sale. If they get

the impression or hear from acquaintances that you will get a "cold shoulder" after their check is cashed, they should go elsewhere.

The last important consideration related to "after the sale" needs is that of User Groups. The salesperson ought to be able to give parents the address of these informal organizations of individuals who enjoy getting together for the purpose of rapping about the fun, uses, and debugging experiences they have had with their machines. An important question for parents to ask in this regard is: will our youngster have any peers that can be called in the Users Group? Many User Group members are even willing to lend out books, magazines, and articles from their personal collections of informational reading related to microcomputers.

QUESTION FIVE: Although a Family's Primary Motive for Getting a Microcomputer is Academic Preparation, Should We Use Our Microcomputer For Other Tasks As Well?

Definitely, yes. Playing games together as a family can contribute to a family's cohesiveness. Besides family entertainment, a parent can also use the microcomputer to get the youngster involved in such matters as household budget management or time management. Family decisions about homework could be facilitated here. Once they begin to look closely at the available software, they will see that they can purchase diskettes pertaining to a great many of the topics covered in their children's curriculum. For example, there are software programs for developing reading vocabulary and spelling, reading comprehension, science, careers, math, reading speed, and so on.

PHASE THREE: 9 Ways Parents Help Their Children Keep Abreast of the Microcomputer Revolution?

Microcomputer applications before the beginning of the decade of the 90's will include such marvels as hardware and software components that encode your teenager's voice into print, the availability (through access to networks) of encyclopedic type information on an incredible variety topics, the addition or even supplanting in some cases of card catalog systems in libraries and the "shelving" of multitudes of software programs. There are a number of very practical things parents can do in their homes that will help their children "stay tuned" and current.

Enroll The Youngster in a Class. Many computer training companies (such as COMPUTER MASTER Corporation) are springing up around the country and provide introductory exposure to the computer as well as advanced classes in its uses.

Rent One. Obviously one of a parent's prepurchase options is to consider renting or leasing a system for a month or so. Many dealers will credit the fee toward the purchase price.

If a parent already owns a home microcomputer and their youngster is moderately proficient with it, consider renting something like a cp/M^{tm} operating system (complete with dual disk drives, 64K RAM, full keyboard and number pad, various training and applications software, etc.) By so doing, parents can provide a youngster with a unit that is widely used in industry and the world of work.

A Clipping File. For a number of years, I have been trying to keep up with developments in microcomputers by clipping out articles on the topic as I came across them in such newspapers and magazines as Time,

Newsweek, U.S. News, Women's Day, Popular Science, Ladies Home Journal, Redbook, and so on. Parents can do the same and then periodically pull the file for updating as well as for dinnertime discussions. The impact of microcomputers on education, business and industry, the medical profession, and so on, is nothing less than phenomenally interesting . . . as parents and youngsters will see once they start their own clippings file.

Order A Subscription. The Children's Television Workshop (developers of Sesame Street, Electric Company, and Nova) put out a monthly magazine for youngsters called Enter: The World of Computers and Electronic Games When parents page through it, they'll quickly see how this magazine makes the fascinating topic of microcomputers even more fascinating. Parents can order a subscription from ENTER, One Disk Drive, P.O. Box 2686, Boulder, Colorado 80322.

Browse Through Computer Magazines. Many children will enjoy a visit to the local library or to a library on a nearby college campus. Together, parents and children can peruse the following magazines:

BTYE	Classroom Computer News
Popular Computing	Computing Teacher
Creative Computing	Computer Education
Computer World	Recreational Computing
Silicon Gulch Gazette	THE Journal
Electronic Education	Electronic Learning

Youngsters will probably find at least one of these magazines hard to put down or so engrossing that they want to take it home. Suggest to parents that relatives can give a gift subscription as a birthday present.

Consumer Reports Approach. When parents see an educational software item advertised and are tempted to buy it, they may first want to "research" the kind of review it got in the "Consumer Reports" of microcomputer educational software - - - - "School Microware Reviews" (published

by Educational Products Information Exchange/Consumers Union; P.O. Box 620; Stony Brook, New York 11790). Many libraries, colleges, larger school districts, and county/regional offices of education have a subscription to this biannual review. At $40 a year, however, its not worth a home subscription). In it, parents and youngsters can find courseware reviews listed by academic subject. Product evaluations are mostly done by teachers. Discussed are such dimensions as equipment compatibility, language, supplier, price, and educational value. In addition, this 50 page booklet references in each issue over 500 other courseware reviews that have appeared in other journals and magazines. The index portion of the booklet gives the supplier of the program and the system or systems with which it is compatible.

Another resource for software evaluation is the DIGEST OF SOFTWARE REVIEWS: EDUCATION. Since 1982, each quarterly issue profile 50 separate programs and digests over 250 critical reviews of such programs. Many college and university libraries shelve this resource under the following call number:

LB 1928.5

D54 X

Parents and children might enjoy a "research field trip" to learn what these reviews have to say about the software they have in mind.

Send the Youngster to a Computer Camp. Many of these camps have been disappointing and have gone broke. Parents might do well to find out if anyone in their User Group knows of "good" computer camps that are still in operation. Many colleges and universities run them during summer sessions and the programs are similar to the science camps that have been offered on campuses for years. Many companies and retail out-

lets offer classes. [Caution: Parents should beware of "hard sell" hidden agendas when their youngster takes these classes or goes to "camp."]

Bookstore Browsing and Buying. Parents can ask their youngsters if they would like to buy a book or two or three at a large bookstore. Parents will notice a plethora of current and bestselling titles, all related to computers. Parents should simply browse with their youngsters. In no time, the youngster will select a number of popular paperbacks to take home.

Two "Must Reads" for Parents. For parents interested in the computer literacy and competence of their youngsters, there are two "required" readings. The first is Mindstorms by Seymour Papert (New York: Basic Books, 1980). This paperback discusses why and how children should be taught to program computers. The second is The Fifth Generation by Edward A. Beigenbaum and Pamela McCorduck (New York: Addison-Wesley). It's now out in paperback and describes how the industrialized world will be radically different as a result of fifth generation microcomputers which will "reason, guess, understand, and behave intelligently." The Japanese have been developing these "thinking machines" since the early 1980's.